

REMARKS

Prior to entry of this amendment, claims 1-16 are currently pending in the subject application.

Applicants appreciate the Examiner's acknowledgement of applicants' claim for foreign priority and receipt of a certified copy of the priority document.

Applicants acknowledge with appreciation the Examiner's consideration of an Information Disclosure Statement filed on July 7, 2003.

Applicants appreciate the Examiner's indication that claims 4 and 8 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicants note with appreciation the Examiner's allowance of claims 9-16.

It is respectfully requested that the Examiner indicate whether the drawings filed May 10, 2001, are acceptable in the next Office action.

Claims 1-16 are presented to the Examiner for further prosecution on the merits.

A. Introduction

In the outstanding Office action, the Examiner objected to claims 1-16 under 37 C.F.R. § 1.75(a) for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention, rejected claims 1-8 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,313,451 to Yagi et al. ("the Yagi et al. reference"), rejected claims 1-8 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,197,399 to Naito et al. ("the Naito et al. reference"), and objected to claims 4 and 8 as being dependent upon a rejected base claim, but indicated that claims 4 and 8 would be

allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, and allowed claims 9-16.

B. Asserted Objection to Claims 1-16

In the outstanding Office action, the Examiner objected to claims 1-16 under 37 C.F.R. § 1.75(a) for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In particular, the Examiner asserted that the term “eliminating the carbonaceous material,” recited in claims 1, 5, 9 and 13 is “unclear and confusing since Applicant states that ‘a rewritable data storage using a carbonaceous material’ ... but later in the claims, the carbonaceous material is eliminated by a tip.” *Office action of Aug. 25, 2004, at p. 2.* This objection is respectfully traversed for at least the following reasons.

In the present invention, information is written in a rewritable data storage by forming carbonaceous material 30 on the conductive layer 20. *See Patent Application Serial No. 09/852,300, at page 8, lines 2-7.* Information may be erased by eliminating the carbonaceous material 30 from a portion of the conductive layer desired to be erased. *See Patent Application Serial No. 09/852,300, at page 8, lines 8-13.* Accordingly, it may be seen that a rewriteable data storage uses carbonaceous material to write and erase information by forming and eliminating the carbonaceous material, respectively.

Claims 1 and 5 each recite a tip that is able to form or eliminate carbonaceous material. Claims 9 and 13 each recite a method of writing/reading a rewritable data storage using a carbonaceous material that includes writing information by forming a carbonaceous material on the conductive layer and erasing information by eliminating carbonaceous material formed on the conductive layer. Accordingly, applicants respectfully submit that

claims 1-16 particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Accordingly, applicants respectfully request reconsideration and withdrawal of this objection to claims 1-16.

C. Asserted Rejection Under 35 U.S.C. § 102(b)

In the outstanding Office action, the Examiner rejected claims 1-8 under 35 U.S.C. § 102(b) as being anticipated by the Yagi et al. reference. Applicants respectfully submit that this rejection includes only claims 1-3 and 5-7, as claims 4 and 8 were indicated as containing allowable subject matter and were not addressed in the Office action in the context of this anticipation rejection. This rejection is respectfully traversed for at least the following reasons.

In the outstanding Office action, the Examiner asserted that the Yagi et al. reference shows “a rewritable data storage using a carbonaceous material comprising all features of the claimed invention as interpreted below.” *Office action of Aug. 25, 2004, at p. 2.*

The subject invention, as presently claimed, is patentably distinct from the disclosure of the cited prior art reference. Specifically, the Yagi et al. reference fails to disclose or even suggest “a tip for forming or eliminating carbonaceous material in the form of spots on the writing plate, the spots representing information recorded on the conductive layer,” as presently recited in independent claim 1, or “a tip disposed in an array having a regular interval corresponding to the striped conductive layer patterns along a cantilever extending across the striped conductive layer patterns in order to form or eliminate carbonaceous material in the form of spots,” as presently recited in claim 5.

In the outstanding Office action, the Examiner compares the probe 6 of the Yagi et al. reference with the tip of the present invention. In the Yagi et al. reference, information is written by bringing the probe 6 "to a predetermined distance from the recording medium 8 by the coarse displacement mechanism 11, and a rectangular pulse voltage having an amplitude of 3 volts and a width of 50 ns is applied as a write voltage by the voltage application device 5 so that electrical conductivity of the recording medium 8 is changed to create an area having a different electrical resistance." *The Yagi et al. reference at col. 2, lines 47-54.* The Yagi et al. reference fails to disclose erasing information.

On the contrary, in the present invention, information is written by the application of a bias voltage (-V) "across the space between the cantilever tip 50 and the conductive layer 20 (an Au layer) of the portion required for writing using the cantilever tip 50 attached to the AFM," thereby forming a carbonaceous material 30 on the conductive layer 20. Information may be erased by applying a bias voltage of reverse polarity (+V) "across the space between the cantilever tip 50 and a portion of the conductive layer 20 (an Au layer) desired to be erased," thereby eliminating carbonaceous material 30 from the portion desired to be erased. *See Patent Application Serial No. 09/852,300, at page 8, lines 2-13.*

In view of the operation of the probe 6 in the Yagi et al. reference as described above, and the operation of the tip 50 of the present invention, it may be seen that the probe of the Yagi et al. is not "a tip for forming or eliminating carbonaceous material in the form of spots on the writing plate, the spots representing information recorded on the conductive layer," as presently recited in independent claim 1, or "a tip disposed in an array having a regular interval corresponding to the striped conductive layer patterns along a cantilever extending

across the striped conductive layer patterns in order to form or eliminate carbonaceous material in the form of spots,” as presently recited in claim 5.

In view of the above distinctions between the subject invention as presently claimed and the cited prior art reference, claims 1 and 5 are believed to be in condition for allowance, and a notice to such effect is respectfully requested.

In addition, because the remaining claims, viz. claims 2-3 and 6-7, depend directly from claims 1 and 5, respectively, claims 2-3 and 6-7 are believed to be similarly allowable as depending from an allowable base claim.

Accordingly, reconsideration and withdrawal of the rejections of claims 1-3 and 5-7 are respectfully requested.

D. Asserted Rejection Under 35 U.S.C. § 102(e)

In the outstanding Office action, the Examiner rejected claims 1-8 under 35 U.S.C. § 102(e) as being anticipated by the Naito et al. reference. Applicants respectfully submit that this rejection includes only claims 1-3 and 5-7, as claims 4 and 8 were indicated as containing allowable subject matter and were not addressed in the Office action in the context of this anticipation rejection. This rejection is respectfully traversed for at least the following reasons.

In the outstanding Office action, the Examiner asserted that the Naito et al. reference shows “a rewritable data storage using a carbonaceous material comprising all features of the claimed invention as interpreted below.” *Office action of Aug. 25, 2004, at p. 3.*

The subject invention, as presently claimed, is patentably distinct from the disclosure of the cited prior art reference. Specifically, the Naito et al. reference fails to disclose or even suggest “a tip for forming or eliminating carbonaceous material in the form of spots on the

writing plate, the spots representing information recorded on the conductive layer,” as presently recited in independent claim 1, or “a tip disposed in an array having a regular interval corresponding to the striped conductive layer patterns along a cantilever extending across the striped conductive layer patterns in order to form or eliminate carbonaceous material in the form of spots,” as presently recited in claim 5.

In the outstanding Office action, the Examiner compares a probe of an AFM to the tip of the present invention. In the Naito et al. reference, when the AFM probe is used to write information, information is written by “injecting an electric charge into the recording domain.” *The Naito et al. reference at col. 34, line 67 - col. 35, line 3.* More specifically, the Naito et al. reference performs a recording method “by injecting positive charges (holes) into the dot-like recording domains 15 by means of an AFM probe coated with Au under an applied voltage of 30V.” *Id. at col. 36, lines 18-21.* The Naito et al. reference discloses erasing information by irradiating the disk 30 with a near-field beam from a semiconductor laser to recombine separated charges. *See, e.g., id. at col. 39, lines 9-11 and col. 52, lines 4-6.*

As discussed at length above, in the present invention, information is written by forming a carbonaceous material 30 on the conductive layer 20 and information may be erased by eliminating carbonaceous material 30 from the portion desired to be erased. *See Patent Application Serial No. 09/852,300, at page 8, lines 2-13.*

In view of the operation of the tip in the Naito et al. reference as described above, and the operation of the tip 50 of the present invention, it may be seen that the tip of the Naito et al. is not “a tip for forming or eliminating carbonaceous material in the form of spots on the writing plate, the spots representing information recorded on the conductive layer,” as

presently recited in independent claim 1, or “a tip disposed in an array having a regular interval corresponding to the striped conductive layer patterns along a cantilever extending across the striped conductive layer patterns in order to form or eliminate carbonaceous material in the form of spots,” as presently recited in claim 5.

In view of the above distinctions between the subject invention as presently claimed and the cited prior art reference, claims 1 and 5 are believed to be in condition for allowance, and a notice to such effect is respectfully requested.

In addition, because the remaining claims, viz. claims 2-3 and 6-7, depend directly from claims 1 and 5, respectively, claims 2-3 and 6-7 are believed to be similarly allowable as depending from an allowable base claim.

Accordingly, reconsideration and withdrawal of the rejections of claims 1-3 and 5-7 are respectfully requested.

E. Allowable Subject Matter

In the outstanding Office action, the Examiner objected to claims 4 and 8 for depending from a rejected base claim, but indicated that claims 4 and 8 would be allowable if rewritten in independent form, and to include all of the limitations of the base claim and any intervening claims. In addition, the Examiner allowed claims 9-16.

Claims 4 and 8 depend directly from claims 1 and 5, respectively, which are believed to be allowable. Thus, claims 4 and 8 are believed to be similarly allowable as depending from an allowable base claim. Accordingly, withdrawal of this objection is respectfully requested, and a notice of allowance including all pending claims is respectfully requested.

F. Conclusion

Since the cited prior art fails to anticipate or render obvious the subject invention as presently claimed, applicants respectfully submit that claims 1-16 are now in condition for allowance, and a notice to that effect is respectfully requested.

The remaining documents cited by the Examiner were not relied on to reject the claims. Therefore, no comments concerning these documents are considered necessary at this time.

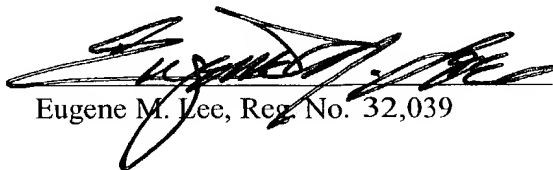
Finally, if the Examiner believes that additional discussions or information might advance the prosecution of the instant application, the Examiner is invited to contact the undersigned at the telephone number listed below to expedite resolution of any outstanding issues.

In view of the foregoing amendments and remarks, reconsideration of this application is earnestly solicited, and an early and favorable further action upon all pending claims is hereby requested.

Respectfully submitted,

LEE & STERBA, P.C.

Date: November 24, 2004

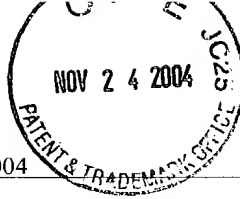


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Serial No. 09/852,300

Amendment dated November 24, 2004



Atty. Docket No. 249/257

Reply to Office action of August 25, 2004

PETITION and
DEPOSIT ACCOUNT CHARGE AUTHORIZATION

This document and any concurrently filed papers are believed to be timely. Should any extension of the term be required, applicant hereby petitions the Director for such extension and requests that any applicable petition fee be charged to Deposit Account No. 50-1645.

If fee payment is enclosed, this amount is believed to be correct. However, the Director is hereby authorized to charge any deficiency or credit any overpayment to Deposit Account No. 50-1645.

Any additional fee(s) necessary to effect the proper and timely filing of the accompanying-papers may also be charged to Deposit Account No. 50-1645.

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